REMARKS

This communication responds to the Office Action mailed on January 18, 2006. Claims

1, 4-5, 8, 15, and 20 are amended, claim 3 is canceled, and no claims are added. As a result,

claims 1-2 and 4-23 are now pending in this Application.

Objection to the Drawings

An objection was raised to the drawings under 37 C.F.R. 1.83(a), in that "the drawings

must show every feature of the invention specified in the claims." More particularly, the Office

has requested "details of the linked list data structure." However, after reviewing the claims and

the drawings, the Applicant was unable to find any claimed features of the linked list data

structure that were missing. For example, FIG. 1 includes links 128, L1, L2; memory locations

132; segments 136, 148, S1, S2; bits 140; and linked lists 156, LL1, LL2. Similarly, FIGs. 2 and

3 include general and specific examples of managing linked lists having segments that are

operated as FIFO resources. Thus, no changes have been made to the drawings, other than

submitting formal versions, each marked as a "REPLACEMENT SHEET." If the Office is able

to locate a specific feature that is claimed and not included in the drawings, the Applicant would

appreciated being apprised of the situation so to investigate further, making amendments as

needed.

§103 Rejection of the Claims

Claims 1-23 were rejected under 35 USC § 103(a) as being unpatentable over Heddes et

al. (U.S. 5,432,908; hereinafter "Heddes") in further view of Appel et al. ("Unrolling Lists," List

94 - 6/1994, ACM; hereinafter "Appel"). First, the Applicant does not admit that Heddes or

Appel are prior art, and reserves the right to swear behind these references in the future. Second,

since a *prima facia* case of obviousness has not been established in each case, the Applicant

respectfully traverses this rejection.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111
Serial Number: 10/750,933
Filing Date: December 30, 2003
Title: RESOURCE MANAGEMENT APPARATUS, SYSTEMS, AND METHODS
Assignee: Intel Corporation

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The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d (BNA) 1596, 1598 (Fed. Cir. 1988). The M.P.E.P. contains explicit direction to the Examiner that agrees with the *In re Fine* court:

> In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991)).

The requirement of a suggestion or motivation to combine references in a *prima facie* case of obviousness is emphasized in the Federal Circuit opinion, *In re Sang Su Lee*, 277 F.3d 1338; 61 U.S.P.Q.2D 1430 (Fed. Cir. 2002), which indicates that the motivation must be supported by evidence in the record.

The Examiner must avoid hindsight. *M.P.E.P.* § 2143.01 (citing *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)). That is, the Examiner cannot use the Appellant=s structure as a "template" and simply select elements from the references to reconstruct the claimed invention. *In re Gorman*, 933 F.2d 982, 987, 18 U.S.P.Q.2d (BNA) 1885, 1888 (Fed. Cir. 1991). If the proposed modification renders the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *M.P.E.P.* § 2143.01 (citing *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984)).

No proper *prima facie* case of obviousness has been established because (1) combining the references does not teach all of the limitations set forth in the claims, (2) there is no motivation to combine the references, and (3) combining the references provides no reasonable expectation of success. The Office also relies on inherency to reject many of the claims. However, inherency does not apply in this case. Each of these points will be explained in detail, as follows.

Combining The References Do Not Teach All Limitations: With respect to independent claims 1, 8, 15, and 20, nothing in the combination suggested in the Office Action will render all of the claim limitations. As admitted in the Office Action, Heddes "does not teach explicitly that more than one pointer to queued data may compose each buffer record, thereby utilizing an unrolled linked-list in lieu of a simple linked list of records ...". In addition, neither Heddes nor Appel teach "operating the memory segment as a first-in, first-out resource" or a memory segment "wherein the memory segment operates as a first-in, first-out resource" as claimed by the Applicant.

Heddes describes the use of buffer control records (BCRs) held in linked lists. *See* Heddes Col. 3, lines 39-44 and Col. 4, lines 21-26. While the linked lists of BCRs are operated as FIFOs, there is no description of how the buffers themselves operate. *See* Heddes, Col. 4, lines 37-42. Thus, Heddes provides no indication as to whether buffers are allocated only when they will be completely filled, or whenever there is data present, even if the buffer will be only partially-filled (and therefore wasting memory space), for example. This mode of operation is not the same as that claimed by the Applicant, where segments are allocated on-demand: only when previously-allocated segments are full.

Appel speaks to a "compile-time CDR coding method" that uses a one-pass algorithm to translate standard programmer list notation into an unrolled representation. *See* Appel, pg. 185, col. 2 and pg. 186, col. 1. The transformation is static, and Appel specifically teaches away from runtime CDR-coding techniques. *See* Appel, pg. 186, col. 2. In addition, Appel introduces the concept of list parity that must be determined by the compiler to find the entry point for the lists. *See* Appel, pg. 188, col. 1, and pg. 191, col. 1. Thus, Appel also does not operate in the manner claimed by the Applicant, and any combination of Heddes and Appel will not provide the claimed limitations.

No Motivation to Combine the References: The Office asserts that "it would have been obvious ... to combine the use of a single data-pointer linked-list to implement a variable depth FIFO as taught by Heddes et al. with the knowledge that such an implementation may be unrolled into a multiple data-pointer linked-list as taught by Appel et al, for the benefit of potentially improving the effective utilization and/or access efficiency of such a logical FIFO

data structure." However, this statement does not take into account that Appel teaches away from hardware implementations, since the "... static cdr-coding technique presented in this paper is a simple compile-time method for doing list compaction. It is attractive for modern machines because it does not require any runtime encoding bits at all." Appel, pg. 192, col. 1.

The test for obviousness under § 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985). References must be considered in their entirety, including parts that teach away from the claims. See MPEP § 2141.02. Thus, there is no motivation to combine Heddes and Appel, since Appel teaches away from the combination.

The use of unsupported assertions in the Office Action does not satisfy the explicit requirements needed for demonstrating motivation as set forth by the *In re Sang Su Lee* court. Therefore, the Examiner appears to be using personal knowledge, and is respectfully requested to submit an affidavit as required by 37 C.F.R. § 1.104(d)(2).

No Reasonable Expectation of Success: The assertion by the Office with respect to combining Heddes and Appel overlooks the details of operation that would result from the suggested combination. That is, even if such a combination were made, Heddes' buffers would operate as groups of unrolled lists, while *the manipulation of the data within the buffers would be unaffected.* Therefore, one of ordinary skill in the art would not be led to a reasonable expectation of success, in that the suggested combination would be unable to provide "operating the memory segment as a first-in, first-out resource" or a memory segment "wherein the memory segment operates as a first-in, first-out resource" as claimed by the Applicant.

As noted previously, the test for obviousness under ' 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985). The fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01.

No Inherency: Finally, the Office asserts, with respect to claims 2-7, 9-14, 16-19, and 21-23 that "… all limitations associated with the allocation, sizing, and/or utilization [of] a conventional unrolled linked-list data structure as the basis of an implementation of a conventional logical FIFO (or its numerical analysis) as disclosed, are considered inherent and obvious to one of ordinary skill in the art …". The Applicant respectfully disagrees.

If the Office relies on inherency then, as recited in MPEP § 2112, "… the examiner must provide basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic <u>necessarily</u> flows from the teachings of the applied prior art," citing *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). No such basis has been provided. For example, there is no technical reason why links must be allocated and deallocated as claimed by the Applicant in claims 10 and 11, or why the size of a segment must be set as claimed in claim 18. Those of skill in the art are aware that other choices may be made, and thus, there is nothing inherent in these features.

Therefore, since there is no evidence in the record to support disclosure by Heddes or Appel of "operating the memory segment as a first-in, first-out resource" or a memory segment "wherein the memory segment operates as a first-in, first-out resource," since there is no motivation to combine Heddes and Appel (in fact, Appel teaches away from combination), since no reasonable expectation of success arises from the suggested combination, a *prima facie* case of obviousness has not been established with respect to independent claims 1, 8, 15, and 20. This conclusion also applies to dependent claims 2-7, 9-14, 16-19, and 21-23, since any claim depending from a nonobvious independent claim is also nonobvious under 35 USC § 103. *See* M.P.E.P. § 2143.03. Finally, there is no evidence in the record that specific features of the claims are inherent. It is therefore respectfully requested that the rejection of claims 1-23 under 35 U.S.C. § 103 be reconsidered and withdrawn.

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CONCLUSION

The Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone the Applicant's attorney, Mark Muller at (210) 308-5677, or Applicant's below-named representative to facilitate the prosecution of this Application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

SACHIN DOSHI ET AL.

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this _17_ day of March 2006.

Chris Hammond

Name

Chris Hammond

Signature